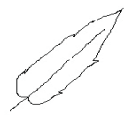


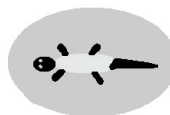
## 10. A Savanna



Looking out across the woods, one of the first things you notice is the huge Red oaks and the Sedge ground cover. You are viewing what is known as a savanna (an ecotype more common in the drier Midwest). This area was once cleared of all but the biggest trees, which had been left to provide shade for livestock, and has since probably burned over several times. This savanna is made up largely of the large Red oaks you see plus intermingled Hophornbeams and the Sedge ground cover.

Do you see the scattering of glacial erratics?

## 11. Vernal pools



This pond may originally have been a vernal pool deepened by farmers in the 1850s to provide year-round

water for their sheep, and more recently further enlarged. Around the pond there are many evergreen (softwood) trees that make this stand appear darker than the nearby deciduous (hardwood) stands. The pond is still functioning as a vernal pool because it contains no fish. This permits Spotted salamanders and Wood frogs to breed there successfully. Natural vernal pools have no inlet and dry up annually, thus no fish.

**Please** keep your pets away from the ponds and vernal pools along the trail because they could harm the fragile life processes and environment.

## 12. Topography Change



You have just passed through a mostly deciduous forest and are now looking at a dense Hemlock stand. This is the result of a change in the topography. Hemlocks do well here because they are on a cooler and moister northwesterly slope. Hemlocks were once heavily logged here, primarily for rough lumber and tannin from their bark; they were also used for railroad crossties. These evergreens probably remain from an old Hemlock forest. Now Sugar maples and Birches have taken over much of the area's forest canopy. Do you see the old Hemlock stumps visible along the trail from the logging of many years ago?

## 13. The Windmill Ridge

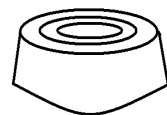


You are now hiking on the spine of the Windmill Ridge, which runs through portions of

Rockingham, Athens, Westminster, Brookline, Putney, and Dummerston. The Ridge is about 16 miles long, averages 2½ miles in width, rises to about 1683 feet (at the Pinnacle), and covers approximately 25,800 acres. On its eastern slope it is the source of East Putney Brook and Sacketts Brook; and on its western slope, of Bull Creek and Grassy Brook. The Ridge provides valuable wintering areas for deer. And its north-south orientation makes it an important migratory route for various mammals and birds.

Following its long-time use by the Abenakis as a hunting ground, this whole area was in the 17th century appropriated by the King of England, soon thereafter to be acquired from him by the Holden family, and not to change hands again until the 1990s when it was purchased by the WINDMILL HILL PINNACLE ASSOCIATION. The ASSOCIATION maintains its more than 1800 acres for habitat protection, outdoor recreation, environmental education, and quiet reflection. In all, about 13% of the Ridge is now permanently protected from development. What could you do to help care for the Ridge?

## 14. Logging



We are in an area that has experienced substantial logging in the past. Indeed, there is lots of evidence that this area has been logged multiple times. One of the first things to notice here is the many stumps of different ages and the variety and mixed ages of the standing trees. Those stumps are the remains of both evergreen and deciduous trees. You can usually tell them apart because evergreen trees are more apt to decay from the outside in, whereas deciduous trees are more apt to decay from the inside out. We believe that the first logging occurred here during "sheep fever", the peak of Vermont's sheep population in the 1830s. The wood was used largely for firewood and building construction. The area was then logged again about 70 years later, and most recently around 1990. This area helps to preserve the history of the Windmill Ridge.

## 15. Sacketts Brook



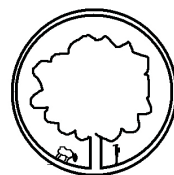
You are crossing the headwaters of Sacketts Brook, a 7.5-mile stream entering the Connecticut River in Putney. Its 6500-acre drainage basin (watershed) captures the rain that falls onto this catchment area (43.3 inches per year on average). Roughly half of this — about 120 gallons per second — is discharged by the Brook into the Connecticut River. The upper 690 acres (11%) of the Sacketts Brook drainage basin fall within the WHPA Windmill Hill Nature Reserve, thus insuring its continued flow and headwaters purity far into the future.

Sacketts Brook has been a major asset to Putney since colonial times, in the past providing water power to a variety of small saw, grist, paper, cloth, and other mills. The Thwing grist mill (on Water St), in operation from about 1796 to 1946, has been preserved by the Putney Historical Society for all of us to enjoy. Not far downstream from that mill (where Mill St becomes Hi-Lo Bidy Rd) is a very special stone arch bridge that was built in 1906 by James Otis Follett.

## 16. Stone Walls – II



The stone wall you are facing here must be thousands of feet long. Typically, a farmer would build a wall like this with the help of his family or neighbors, and might have been able to lay about 10 to 20 feet of wall in a day. The walls were built to keep livestock either in or out of a field, and perhaps also to clear the farmland of rocks and/or to mark land boundaries. Because of its height, this wall is thought to have enclosed a sheep pasture. This wall was most likely built in the early 1800s and is in fairly good condition for its age. Vermont's stone walls are so extensive that they have been compared to the great pyramids of Egypt. There is also evidence here of barbed wire, which was put up after 1870 when it was invented, a far less labor-intensive means of fencing.



## Windmill Ridge Nature Reserve & Trail

The Windmill Ridge Nature Reserve & Trail is a great place to visit, filled with history, fun, and natural and unnatural occurrences. This portion is owned and managed by the WINDMILL HILL PINNACLE ASSOCIATION, which offers programs to conserve the precious land for its natural, historical, educational, recreational, and inspirational values, offering assistance especially to the local community. Animals on the ridge include Deer, Moose, Bear, Fishers, Fox, various small mammals, reptiles, amphibians, and numerous birds. The entrance gate at the Holden Access Trailhead was constructed by Zach Weinberg, which depicts the Pinnacle and includes various of the rock types you will encounter on your hike. Keep in mind that this Reserve provides a refuge for many of its visitors who seek peace and relaxation. Hunting is permitted in season, but not the use of motorized vehicles. Please keep your pets under control. We have a carry-in-carry-out policy, so please leave no trace! Thanks, and we hope you enjoy your visit and learn something from this Guide.

## Recommended for further Reading

*Hands on the Land: a History of the Vermont Landscape* by J. Albers (MIT Press, 2000). *The Nature of Vermont: Introduction and Guide to a New England Landscape* by C.W. Johnson (University Press of New England, 1998). *The Story of Vermont: a Natural and Cultural History* by C.M. Klyza & S.C. Trombulak (University Press of New England, 2000). *Forest Forensics: a Field Guide to Reading the Forested Landscape* by T. Wessels (Countryman Press, 2010). *Sermons in Stone: the Stone Walls of New England and New York* by S. Allport (W.W. Norton, 1990).

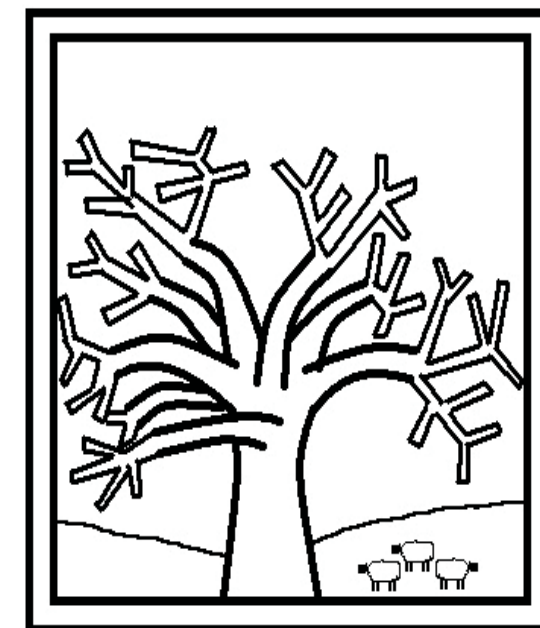
## Attribution

This Trail Guide was created by the 7th-8th grades of the **Compass School** of Westminster in 2004, in collaboration with the Vermont Institute of Natural Science of Woodstock and the WINDMILL HILL PINNACLE ASSOCIATION. Subsequent editions have been revised by the ASSOCIATION, which would welcome feedback.

**WINDMILL HILL PINNACLE ASSOCIATION**  
PO Box 584, Saxtons River, VT 05154  
whpa@sover.net 802/869-2071

—AHW/140921

# A WALK THROUGH TIME



## A self-guided tour including the natural and cultural history of this conserved land

[4th edition]

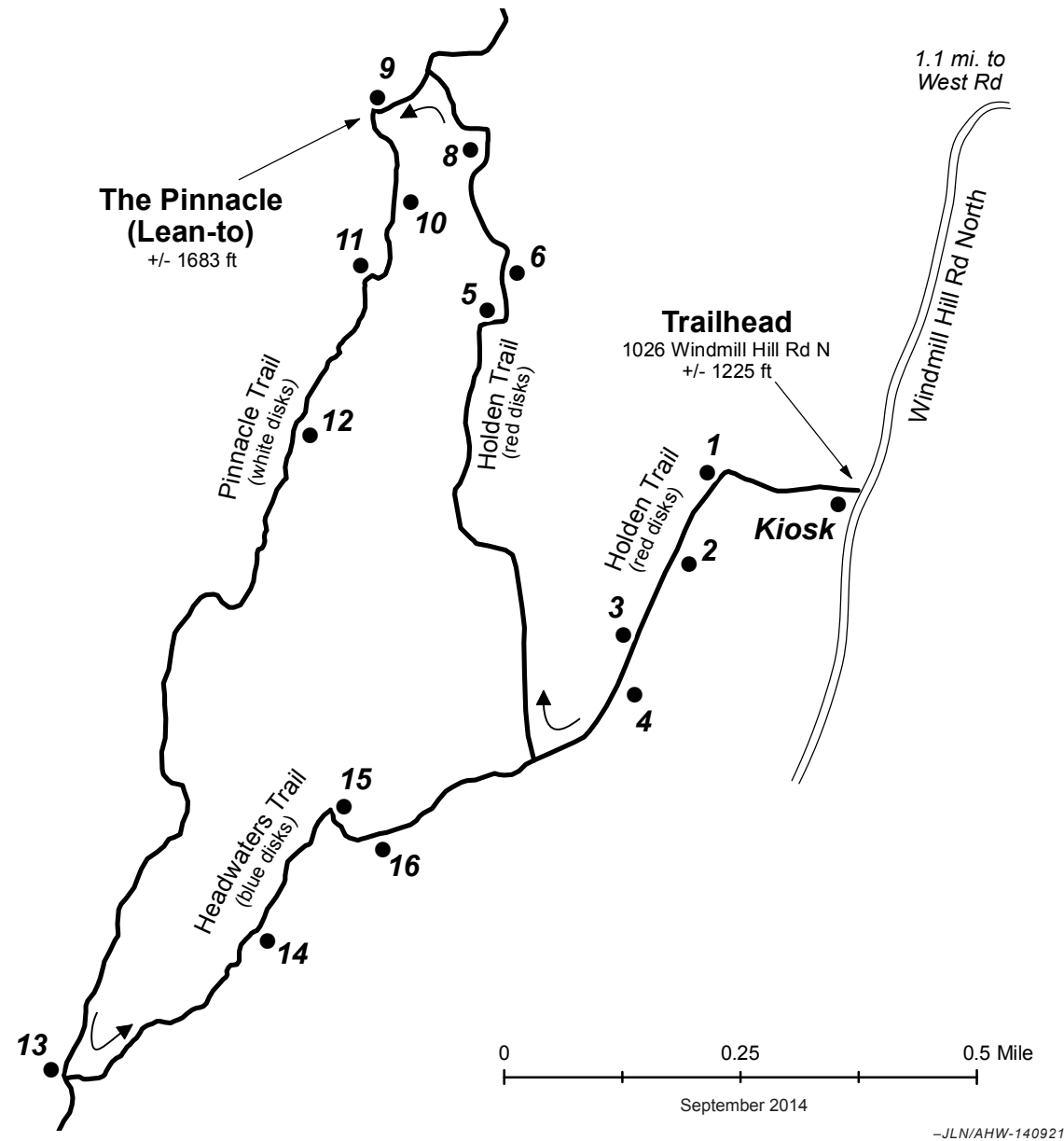
## How to Use this Trail Guide

As you walk along the trail, you will notice wooden posts with symbols on them. Try to match the symbol on the post with one in this Guide. Read the paragraph next to the symbol to learn why the site is significant. The total hike is 3.7 miles; our recommendation is to follow the numbers in order (counter-clockwise on the map).

→ PLEASE ←  
TAKE ONLY PHOTOGRAPHS  
LEAVE ONLY FOOTPRINTS  
STAY ON THE TRAIL  
REMOVE NOTHING

**WINDMILL HILL PINNACLE ASSOCIATION**  
PO Box 584, Saxtons River, VT 05143  
2014

WINDMILL HILL PINNACLE ASSOCIATION  
Windmill Ridge Nature Reserve & Trail  
A WALK THROUGH TIME



- |   |                                 |
|---|---------------------------------|
| Station #1: Stream and Bridge             | Station #9: The Pinnacle        |
| Station #2: Bedrock                       | Station #10: A Savanna          |
| Station #3: A Wolf Tree                   | Station #11: Vernal Pools       |
| Station #4: Foundations — I               | Station #12: Topography Change  |
| Station #5: Foundations — II              | Station #13: The Windmill Ridge |
| Station #6: Stone Walls — I               | Station #14: Logging            |
| Station #7: This Station no longer exists | Station #15: Sacketts Brook     |
| Station #8: A Maple Stand                 | Station #16: Stone Walls — II   |

Start at the Holden Access Trailhead (at 1026 Windmill Hill Road North). Stations 1-6,8 are on the Holden Trail (red dots, 1.5 miles). Stations 9-13 are on the Pinnacle Trail (white dots, 1.0 mile). Stations 14-16 are on the Headwaters Trail (blue dots, 0.7 mile). Then return to the Trailhead on the Holden Trail for the final 0.5 mile.

### 1. Stream and Bridge



The bridge you are looking at was probably built by the Holden family, which owned this land for hundreds of years. It was made for carts and wagons to cross the stream and to avoid ice in winter and sugaring season. The stream was so powerful owing to rains in the summer of 2004 that it washed great amounts of soil under the bridge and clogged it. This caused the stream to flow onto the trail and is a great example of how quickly and easily erosion can change the topography of an area. The WINDMILL HILL PINNACLE ASSOCIATION has since restored the stream to its former channel to decrease erosion.

### 2. Bedrock



Take a look at the amazing rocks in the middle of the trail. These giant rocks are not one-, not two-, but four-hundred million years old. They are pieces of the earth's crust or bedrock. This bedrock is limy (calcareous) schist (a metamorphic rock with basic minerals similar to the calcium salts found in common heartburn medications). The rock formed originally as mud under the ocean. Where calcareous schist occurs, the soils are richer for plants. This rock has been exposed by years of wagon, logging, sheep, and foot travel.

### 3. A Wolf Tree



Check out the enormous sugar maple tree with a forked trunk and bulging branches reaching out on all sides. This "wolf tree", which stands alone like a lone wolf, is adjacent to the trail and has a trunk far thicker than the other trees in the area. This tree is here because in the mid- 1800s it provided shade for sheep and other farm animals. When a wolf tree is young, its branches grow out widely from the trunk because when there are no trees nearby competing for sunlight it can quickly expand its branches sideways. There was no competition for the tree as a sapling because most of the other trees had been cleared by logging and for pasture.

### 4. Foundations – I



Here you are looking at the site of an old homestead. Look carefully and you will see an old well hole, the foundations of where a house and a barn used to be, and signs of a nearby garden. This site used to have lots of pastured land, which is indicated by the scattered wolf trees in the area. The trail itself used to be a wagon road between Westminster and Brookline. These old foundations are interesting because they have been here since around 1870, and you can still tell that people used to live here.

### 5. Foundations – II



The many house foundations found in Vermont's woodlands of today let us know that this land had once been cleared and occupied by busy farming communities. In fact, the very substantial foundation here is the remains of a home built by Stephen Holden (1745-1821) when he moved up from Massachusetts in the late 1700s or early 1800s. Just think how long these walls have held up against frost heaving, tree roots, etc.

### 6. Stone Walls – I



Vermont woodlands contain many thousands of miles of stone walls built by our early settlers for one or more reasons: to keep livestock in or out; to clear a field for tilling; and/or to mark property boundaries. Stone walls are now an essentially permanent feature of Vermont's rural landscape. They are still useful in describing property boundaries, often prevent soil erosion, and also provide a habitat and thoroughfare for many small creatures.

Can you see that the land-use histories differed on the two sides of the well-built east-west wall found here?

### 7.

[This station no longer exists.]

### 8. A Maple Stand



As you walk up through the mysterious woods of the Windmill Ridge, you will come to a large Sugar maple stand. In the 1800s this was a place where sheep grazed. When Vermont's sheep farming became too difficult, the nearby farm was abandoned and the field was left to exist on its own. If you look toward the middle of this stand you will see a large old rotted out Maple tree that has died of old age. Some think of this tree as the grandparent of all these Maples, but we think of it as one of the ancestors of the mountain itself! All of its grandchildren are growing around it because when the farmer abandoned the field it was subsequently neither mowed nor pastured and this, the grandparent maple, scattered hundreds of seeds, and those seeds have now become young adults.

Maple tree roots put chemicals into the soil that permit sedges to grow, but few shrubs or other flowering plants. You may also notice a scattering of large rocks. As the last glacier melted, it left behind these so-called glacial erratics which it had originally pushed there from the north.

### 9. The Pinnacle



Congratulations — you have made it to the top! The Holden family was the first to own this land. The Farnsworths bought this peak and in 1964 built a cabin as their retreat. The structure then had four walls, several rooms, and a kitchen. The view was a lot wider then because the land all around had been cleared. When the WINDMILL HILL PINNACLE ASSOCIATION acquired the land, it converted the structure to this now much used lean-to. You can still see several ski mountains, including Stratton, Okemo, and Mt Snow. In the fall there is the beautiful Vermont foliage.

You may not know that 400 million years ago you could not have been standing here: you would have been deep under the sea. Then, as the earth's plates moved, rocks that had been under the ocean were pushed above the surface. The emerging land has been named Avalonia. The black rock you see near the fire pit is a volcanic formation left from that time period. Later, as the Laurentide glacier moved over the mountains, it exposed those rocks. Subsequently, excessive sheep grazing led to erosion that further exposed the rock.